

## ABSTRACT

The present invention provides an optical fiber, comprising a core having an alpha parameter in the range of approximately 2 to approximately 8, a maximum index percent difference between the core and a cladding in the range of approximately 0.3% to approximately 0.5% and a core diameter in the range of approximately 6.0 to approximately 16.0  $\mu\text{m}$  and a cladding. The optical fiber has a bandwidth of at least approximately 0.6 GHz.km at 850 nm, and is configured for multimode operation at a wavelength less than 1300 nm and single mode operation at a wavelength of at least approximately 1300 nm. The fiber also has significantly reduced intermodal noise. The present invention also includes a method of designing such a fiber, a fiber optic system provided such a fiber and a method of operating a fiber optic system with such a fiber.